Teacher Name: Kim Norgaard Grade 3

Project Summary: Third grade students will experiment, synthesize, and extend their learning about energy. Using collaboration, research, innovation and technology, students will learn that they can positively change the world with their learnings and actions.

Entry Event: Read Aloud *Picture book of The Boy Who Harnessed The Wind* and TED talk of William Kamkwamba, author of the book. Discuss that we can change the world!

Need to Know Questions:
What is energy?
What are the different sources of energy?
How much energy is consumed in a year?
How can we use and save energy responsibly?
How and which energy can become renewable?
What are the environmental impacts of energy?
How can we use the scientific method or engineering design process to help us better understand and implement green energy in our daily lives?

Explore and Research: Teacher will explain the difference between renewable and nonrenewable energy sources: Solar Energy, Geothermal Energy, Wind power, Biomass, Hydropower. Show a pie graph of the recent survey of energy consumption in the United States:
Day 2&3:
Students form collaborative groups to research green energy. Using web sites:
https://www.saveonenergy.com/kids-learning-center/
www.sciencebuddies, www.need.org, www.eia.gov/kids/energy
http://www.eschooltoday.com/energy/renewable-energy/hydro-energy.html
http://www.funkidslive.com/learn/curious-kate/curious-facts-insulation/
http://www.kids.esdb.bg/solar.html
http://www.alliantenergykids.com/energyandtheenvironment/renewableenergy/022397
http://www.kidzworld.com/article/17859-the-kids-guide-to-global-warming
http://news.nationalgeographic.com/news/2002/01/0122_020122_tvmudbatteries.html
https://www.saveonenergy.com/assets/global/downloads/teacher-instructions-energy-savings.pdf+&cd=1&hl=en&ct=clnk&gl=us
They also read and discuss books:
Sun Power by E. Porter
The Powerful World of Energy with Max Axiom
A Warmer World by C. Arnold
Energy Island by A. Drummond
Clean Energy by Sally Ride Science
Solar Energy Foss
A Kid's Guide to Climate Change and Global Warming
The students take notes and formulates a driving question on their energy topic.

Explain: Student teams will create posters to present their research and findings to the rest of the class. Kids work together to work on an informative poster with captions, slogans, and Illustrations about their chosen green energy. Since each group learned about a unique form of green energy, the students also recognized themselves and each other as "experts" of the topics and teachers to the rest of the class. Each poster must include:
Title
3-5 facts about the green energy
1-2 ways people can help the environment by using alternative energy
1-2 illustrations or diagrams to educate others about the topic.

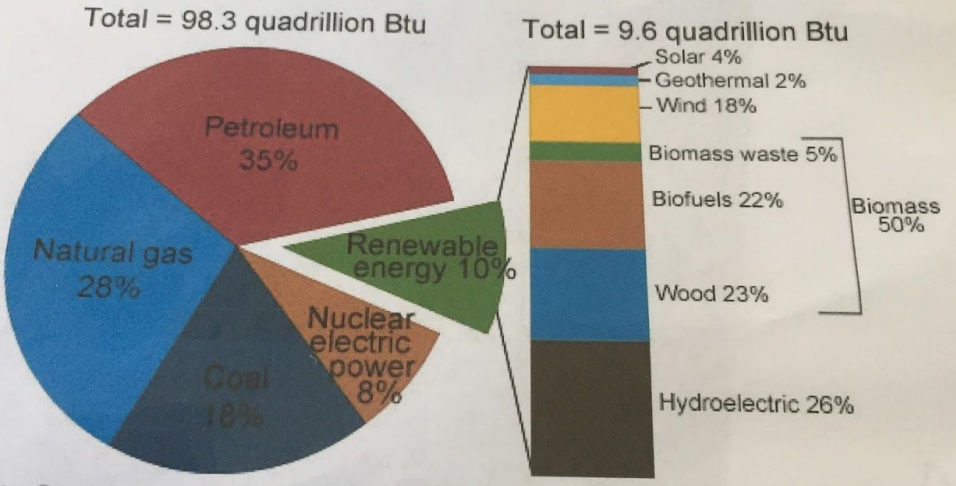
Extend: Students choose to design a product or conduct an experiment to deepen their thinking about green energy. Each child creates a display board that includes:

- Background Research
- Define the Problem
- Materials and Equipment
- Experimental Procedures
- Communication of Results
- Persuasive Essay "Call to Action"
- Bibliography/sources

Invite parents and other classes to come to class Green Energy Faire! Students can present their findings, prototypes, and experiments.

Example experiments and Prototypes:
Wind Turbine
Solar Oven
Mudd, or Fruit battery powered device
Salt water environmental battery
Solar powered toy
Can the color of your house Reduce Energy?
Rooftop Gardens: Are they a COOL idea?
Greenhouse effect experiment
How can you make Windows Energy Efficient?

U.S. energy consumption by energy source, 2014



Note: Sum of components may not equal 100% as a result of independent rounding.

Source: U.S. Energy Information Administration, Monthly Energy Review, Table 1.3 and 10.1 (March 2015), preliminary data

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Experimental Design

1. Materials needed:

2. Variable of Experiment:

3. Controls of Experiment:

4. Steps of Experiment:

Hypothesis

I think this will happen during my experiment:

Question

Is your question testable? _____

Research

Think of 2 topics or questions associated with your science inquiry that you would like to know more about. You will do research on these 2 items to build your background knowledge before you design and conduct your experiment.

Research Idea 1 _____

Websites Used: _____

_____

List at least 3 facts you discovered (in your own words):